

Remarks

Claims 1 – 17 are pending. Favorable reconsideration is respectfully requested.

Claims 1- 12 have been rejected under 35 U.S.C. § 103(a) over *Mathur* et al. U.S. published application 2003/0229175 (“*Mathur*”; now U.S. Patent 6,989,120 B2), in view of Schuster et al. U.S. 5,854,343 (“*Schuster*”). Applicants respectfully traverse this rejection.

Mathur is directed to a process of mixing untreated filler (col. 1, lines 61 - 62) with organopolysiloxane to form high temperature vulcanizable rubber (HTV) (“silicone”) employing, in a first mixing stage, a twin screw extruder, and then compounding the filler/silicone mixture with silicone gum in a reciprocating single screw kneader.

Schuster is directed to a process for preparing liquid silicone rubber wherein pre-hydrophobicized filler is mixed with silicone in a multi-chamber kneading cascade where material passes from one kneading chamber to another in a direction transverse to the axes of rotation of the kneading tools. See column 2, lines 30 - 35. While discussing the background art, *Schuster* indicates that use of a reciprocating kneader for final compounding, as taught by U.S. 4,737,561, and use of a twin screw extruder, as taught by AU 91 76 256, do not allow for sufficient mixing, and suffer greatly from emissions. To alleviate the problems of the prior art, *Schuster* avoids both twin screw extruders and reciprocating kneaders, substituting for these a kneading cascade followed by a devolatilization chamber. See, e.g. column 7, lines 8 - 16.

The *Schuster* and *Mathur* references cannot properly be combined, for several reasons, as discussed below. Moreover, one skilled in the art, with these references before him, would not be directed to the presently claimed invention.

It is now well established that for references to be combined, there must be “clear and particular” evidence of motivation to combine. Applicants respectfully submit that

one skilled in the art would not be motivated to combine these references, and that there is certainly no “clear and particular” evidence to the contrary.

The *Schuster* and *Mathur* references are not directed to the same technological field. *Schuster* is directed to the preparation of liquid silicone rubbers (“LSR” in the industry), which are viscous to pasty or putty-like curable compositions, used for casting operations, for example. The reactive silicones employed in such compositions have a relatively high proportion of reactive groups and a relatively low viscosity. *Mathur*, on the other hand, is directed to high temperature vulcanizable rubbers (“HTV rubber” in the trade), which are gum or solid materials, not liquid, generally containing only a small proportion of reactive groups for final crosslinking. One skilled in the art would not be motivated to combine processes directed to such different products, even though both involve the addition of filler. The characteristics of the base compositions to which the fillers are added are far too different.

Second, *Schuster* himself teaches avoiding twin screw extruders and reciprocating kneaders, replacing both of these with a chambered kneading cascade. One skilled in the art would not be motivated to add to *Schuster*’s process the very machines he attempts to avoid. *Schuster*, for example, addresses the problems with high emissions and employs a devolatilization vessel to deal with these issues. A reciprocating kneader must itself be devolatilized, as recognized by *Schuster*, which is why he avoids the latter and employs a devolatilization chamber instead.

Third, the process of *Schuster* involves addition of prehydrophobicized filler to his liquid silicones, while *Mathur* uses untreated silica. See, column 1, entire column, especially lines 61 - 62. These types of fillers are diametrically opposed, and their manner of incorporation into very hydrophobic silicones is very different.

Finally, *Mathur* teaches against the use of conventional kneaders and mixers as in his Comparative Example 1, and instead employs “a first co-rotating intermeshing twin

screw extruder, and compounding . . . in a second single shaft reciprocating kneader.”
Column 1, line 65 to column 2, line 2.

For the reasons discussed above, Applicants respectfully submit that one skilled in the art would not be motivated to combine these references, and if were combination proper, the combination would not direct the skilled artisan to the claimed invention.

New claims 13 - 17 have been added to more particularly point out and distinctly claim certain aspects of the subject invention. These claims are fully supported by the specification as filed, including the examples. Pre-hydrophobicized filler, for example, is disclosed at page 7, line 20; the use of hydrophobicizing agents in the paragraph bridging pages 9 and 10, structure improvers on page 10, 2d paragraph, and the temperature regime at page 6, lines 18 - 22 and page 5, lines 13 - 19.

The benefits of the use of the combination of the transverse kneading chambers and the reciprocating kneader which follows thereafter are illustrated by Example 1, employing a kneading cascade and reciprocating kneader, from which a first comparative product (C1) is taken at the exit of the kneading cascade and an inventive product (Example 2) is taken at the output of the reciprocating kneader, with Comparative Examples C3 and C4 which employ only a reciprocating kneader, Example C3 with partial recycle, and Example C4 without any recycle.

The Examples show that neither a kneading cascade as taught by *Schuster* nor a reciprocating kneader, even with recycle, are capable of producing an HTV rubber product of the quality achieved by Applicants' process.

Applicants submit that the claims are now in condition for Allowance, and respectfully request a Notice to that effect. If the Examiner believes that further discussion will advance the prosecution of the Application, the Examiner is highly encouraged to telephone Applicants' attorney at the number given below.

Respectfully submitted,

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